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IS 12537 (1989): Small Tools - Hub Type Gear Shaper Cutters
[PGD 32: Cutting tools]



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Indian Standard

**SMALL TOOLS — HUB TYPE GEAR
SHAPER CUTTERS — SPECIFICATION**

भारतीय मानक

घोखार — हब टाइप के गियर आकृतिकार कर्तक — बिशिष्टि

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NEW DELHI 110002

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 13 February 1989, after the draft finalized by the Small Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

In the preparation of this standard, considerable assistance has been derived from DIN 1826 : 1977 'Pinion type cutter for cylindrical gears, extended hub gear cutter for spur gear', issued by the Deutsches Institut für Normung.

Indian Standard

SMALL TOOLS — HUB TYPE GEAR SHAPER CUTTERS — SPECIFICATION

1 SCOPE

1.1 This standard covers the dimensions and other requirements of hub type gear shaper cutters suitable for module 1 to 8 mm conforming to IS 2535 : 1978 'Basic rack and modules of cylindrical gears for general engineering and heavy engineering (second revision)'.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	Title
IS 2102 (Part 1) : 1980	General tolerances for dimensions and form and position: Part 1 General tolerances for linear and angular dimensions (second revision)
IS 7291 : 1981	Specification for high speed tool steel (first revision)
IS 7778 : 1975	Methods for sampling small tools
IS 8731 : 1978	Technical supply conditions for general purpose gear hobs

3 DIMENSIONS

3.1 Dimensions of hub type gear shaper cutters shall be as given in Tables 1 to 4, read with Fig. 1.

3.2 Tolerances

3.2.1 Class of accuracy and tolerances for cutters shall be according to 'Indian Standard Gear

shaper cutter — Class of accuracy and tolerance (under preparation)'.

NOTE — Till such time the standard under preparation is published, the requirement shall be as agreed to between the purchaser and the supplier.

3.2.2 For dimension where tolerance has not been specified, tolerance of medium series of IS 2102 (Part 1) : 1980 shall apply.

4 MATERIAL

4.1 Gear shaper cutter shall be of high speed tool steel of designation XT91W6 CoMo 5Cr4V2 in accordance with IS 7291 : 1981, or equivalent as agreed between the manufacturer and the user.

5 HARDNESS

5.1 Depending upon the choice of the high speed steel, hardness shall be between 820 to 900 HV measured on a flat surface.

6 GENERAL REQUIREMENTS

6.1 All sharp corners except the cutting edges shall be removed.

6.2 Profile of gear shaper cutters shall be according to 'Indian Standard Reference profiles for gear cutting tools for involute teeth according to IS 2535 : 1978 (under preparation)'.

NOTE — Till such time the standard on profile of gear shaper cutters is published, IS 8731 : 1978 shall be referred.

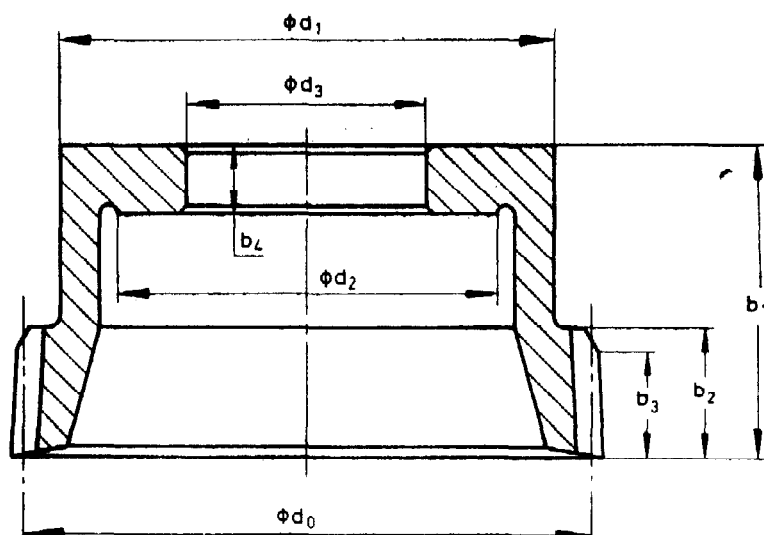


FIG. 1 DIMENSIONS FOR HUB TYPE GEAR SHAPER CUTTER

Table 1 General Plan for Hub Type Gear Shaper Cutters

(Clause 3.1 and Fig. 1)

All dimensions in millimetres.

m	Nominal Diameter (= pitch circle diameter, d_0)		
	75	100	125
	Number of teeth Z_0		
1	76	100	—
1.125	66	88	—
1.25	61	80	—
1.375	54	72	—
1.5	51	68	—
1.75	43	58	—
2	38	50	64
2.25	34	45	—
2.5	32	40	50
2.75	28	36	—
3	25	33	42
3.5	22	29	—
4	19	25	32
4.5	16	22	—
5		20	26
5.5		18	—
6		17	22
7	—		18
8	—		16
Bore diameter d_3	31.745	31.745 or 44.450	31.745 or 44.450
Table	2	3	4

Table 2 Dimensions for Hub Type Gear Shaper Cutter — Nominal Diameter 75.

(Clause 3 and Fig. 1)

All dimensions in millimetres.

m	z_0	d_0	b_1 , Min	b_2 , Min	b_3 , Min	b_4 , Min	d_1	d_2	d_3 H_3
1	76	76	41	12	10	9	68	50	31.745
1.125	66	74.25		14	12		65		
1.25	61	76.25		15	13		68		
1.375	54	74.25	41	17	14	9	65	50	
1.5	51	76.5					65	50	
1.75	43	75.25					65	50	
2	38	76	41	19	16	9	65	50	
2.25	34	76.5					62	45	
2.5	32	80					62	45	
2.75	28	77	43	21	18	10	62	45	
3	25	75					62	45	
3.5	22	77					60	45	
4	19	76	46	23	21	12	62	42	
5	16	80					62	42	

6.3 For the requirements not covered under this standard, reference shall be made to 'Indian Standard Gear shaper cutter — Technical supply conditions (under preparation)'.

NOTE — Till such time the standard under preparation is published, the requirement shall be as agreed to between the purchaser and the supplier.

Table 3 Dimensions for Hub Type Gear Shaper Cutter — Nominal Diameter 100

(Clause 3.1 and Fig. 1)

All dimensions in millimetres.

m	z_0	d_0	b_1 , Min	b_2 , Min	b_3 , Min	b_4 , Min	d_1	d_2	d_3 H_3	
1	100	100	46	12	10	11	90	62	31.745 or 44.450	
1.125	88	96		14	12					70
1.25	80	100		15	13					
1.375	72	99	46	17	14	11	90	62		
1.5	68	102		19	16					
1.75	58	101.5						90		62
2	50	100	46	19	16	11	85			
2.25	45	101.25								
2.5	40	100								
2.75	36	99	46	23	18	11	85	62		
3	33	99								
3.5	29	101.5								
4	25	100	46	23	18	12	82	60		
4.5	22	99					80			
5	20	100					82			
5.5	18	99					78			
6	17	102					46	25		20

Table 4 Dimensions for Hub Type Gear Shaper Cutter — Nominal Diameter 125

(Clause 3.1 and Fig. 1)

All dimensions in millimetres.

m	z_0	d_0	$b_1,$ Min	$b_2,$ Min	$b_3,$ Min	$b_4,$ Min	d_1	d_2	d_3 H_3
2	64	128	48	22	18	12	115	80	31.745 or 44.450
2.5	50	125		23			110	75	
3	42	126							
4	32	128	48	23	18	12	110	75	
5	26	130		25					
6	22	132							
7	18	126	48	25	20	12	100	65	
8	16	128		30					

7 PROTECTIVE COATING

7.1 Each gear shaper cutter shall be covered by a suitable rust proofing material and then wrapped in non-absorbent paper.

8 SAMPLING

8.1 The sampling and criteria of acceptance shall be in accordance with IS 7778 : 1975.

9 DESIGNATION

9.1 A hub type spur gear shaper cutter, with module 3 mm, nominal diameter 100 mm, bore diameter 44.450 class of accuracy 'A' and reference profile RPI shall be designated as:

Hub Type Gear Shaper Cutter

3 × 100 × 44 × A — RPI IS 12537 : 1989.

10 MARKING

10.1 Gear shaper cutters shall be marked with the following information:

- Designation,
- Name of manufacturer or trade mark,
- Module,
- Pressure angle,
- Number of teeth,
- Reference profile, and
- Working depth.

11 PACKING AND PACKAGING

11.1 Each gear shaper cutter or a number of gear shaper cutters of the same type shall be packed in a carton bearing the size, number, designation and manufacturer's name and trade mark.

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